BSL-MED

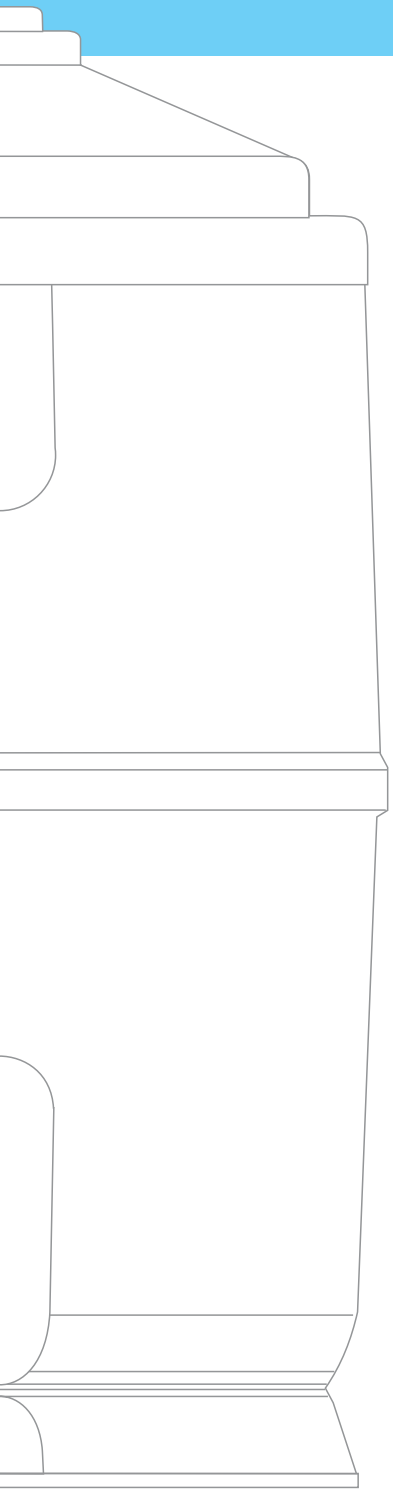
EKSV

WATER TREATMENT UNIT

BSL-MED-1

TU 3697-001-27478758-008

St. Petersburg 2012



Company-developer ZAO "REKA" (REKA, JSC) offers clear, life-giving, and accessible drinking water of the premium quality in every house and for every person.

WATER TREATMENT UNIT "BSL-MED-1"

TU 3697-001-27478758-008

WATER OF PREMIUM QUALITY

Is designed for high quality potable water production by the method of electrochemical purification

St. Petersburg 2012

"BSL-MED-1" unit **(EKSVO)**

This is a complex unit where water purification is carried out by an electrochemical method at the molecular level, which allows to obtain biologically active water with unique characteristics and balanced in mineral composition. It **removes harmful substances, as well as bacteria, viruses and protozoa** while all the necessary substances that are beneficial to the human body (potassium, magnesium, sodium, calcium, chloride, phosphate, carbonate, etc.) remain in the purified water. The resulting water has antioxidant properties, stimulates the removal of free radicals from the body. Unlike conventional filters using sorption, - and ion exchange membrane technology, water treatment by electrochemical method has several advantages:

- **Robust disinfection.** Emitted ozone and atomic oxygen kill all bacteria, viruses and protozoa in the treated water under the influence of the electric field.
- **Improvement of consumer properties** such as smell, transparency, color and taste of drinking water and food prepared on its basis.
- **Preservation of mineral composition.** Substances which are necessary and beneficial to the human body (such as potassium, magnesium, sodium, calcium, chlorides, phosphates, carbonates, etc. - specific for the location you live in) are not removed but remain in the purified drinking water unchanged and are actively involved in the metabolism processes.
- **Retention of a permanent quality of drinking water purification** during the entire period of the unit operation.
- **Heavy metal salts, organic and mineral impurities are removed** from the treated drinking water; compared to conventional filters and sorption technologies, they are not accumulated but are regularly removed.
- **The quality of treated and purified drinking water stays constantly high.**

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1. ATTENTION :

- Water treatment unit **“BSL-MED-1” (EKSVO)** is designed for electrochemical and filtrational water purification for nutritional purposes.
- All parts of the unit are made of materials approved for use in the food industry;
- When you purchase the unit, please check presence of the issued warranty card;
- Make sure that the unit has complete set and is in salable condition;

Please, read the manual CAREFULLY.

2. SAFETY MEASURES:

IT IS PROHIBITED:

- To use the unit for purposes other than intended, namely, to fill and clean other liquids different from water;
- To operate the unit with mechanical damage of the reactor case, defective control and power unit or power cord;
- To pull on the power cord when you turn off the unit from the network or turn off the control and power unit from the reactor;
- To clean the surface of the reactor case, funnel, sludge collection cone, and other parts using solvents and abrasive agents.
- To open and repair the control and power unit by yourself.

RECOMMENDED:
Remove moisture from the surface of the reactor case, control unit and table with a napkin before turning the unit on.

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3. PRINCIPLES OF OPERATION.

Several different ways of active influence on the treated water are used in the unit:

- static magnetic field of weak intensity exposure;
- method of electrochemical coagulation;
- electroflotation method;
- filtration method.

METHOD OF MAGNETIC WATER TREATMENT is performed by pouring treated water through a ring-type permanent magnet embedded into a cap-funnel.

METHOD OF ELECTROCHEMICAL COAGULATION - all harmful substances, including organic compounds, are actively bound and transformed by aluminum hydroxide ions into a light foam. The ions are formed during the treatment process in the reactor.

ELECTROFLOTATION METHOD - atomic oxygen and hydrogen are produced during the process of turbulent water electrolysis in the reactor, then they gather in bubbles, and actively bind the already formed foam. This foam (sludge) floats to the surface of the treated water. It is collected in the end of the process of electroflotocoagulation with a special sludge collection cone. The sludge is poured out and the sludge collection cone is rinsed out with tap water.

FILTRATION METHOD - treated water is poured from the reactor via the filtering tank to the collecting tank. The filtering tank contains a fine filtering element for residual sludge removal.

Water in the collecting tank is ready for consumption. The collecting capacity can be of any kind (bucket, jar, can, etc.), but it is better to be a glassy one.

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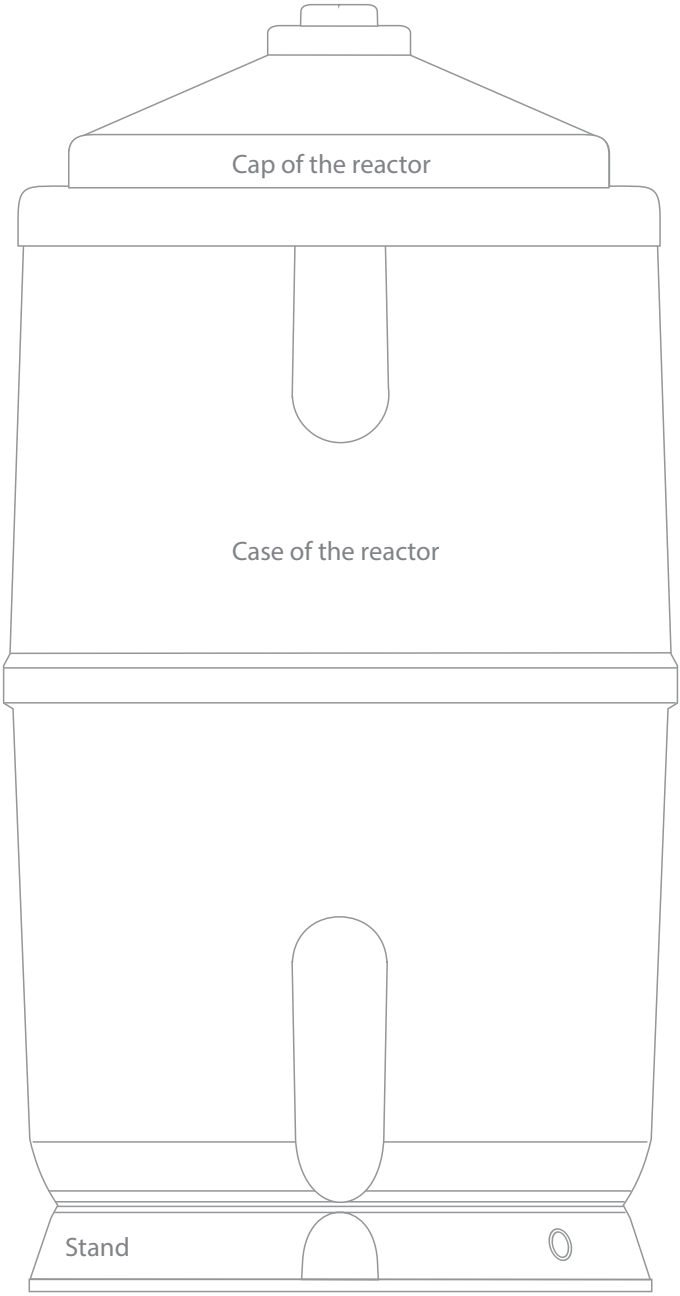

Figure 1. Reactor.

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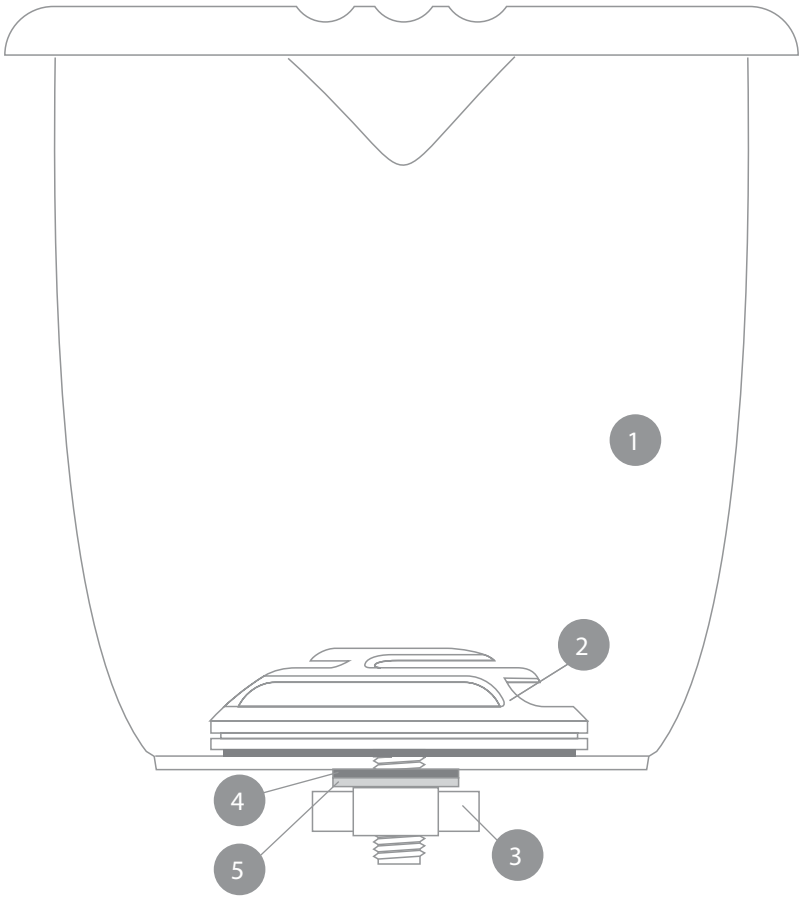

Figure 2. Filtering tank.

1 - filtering tank
2 - filtering element
3 - nut-lock for the filtering element
4 - rubber sealing gasket
5 - polystyrene sealing washer

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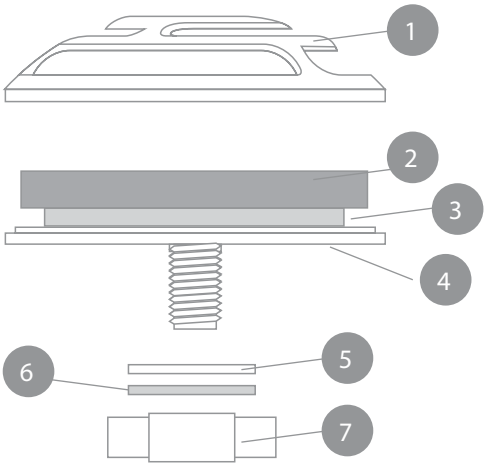

Figure 3. Filtering element.

1 - filtering element cap
2 - big filter-collector
3 - small filter-collector
4 - basis of the filtering element
5 - rubber sealing gasket
6 - polystyrene sealing washer
7 - nut-lock of the filtering element

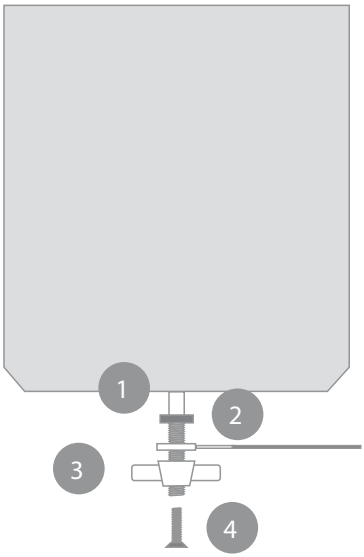

Figure 4. Electrode

1 - O-ring
2 - contact lug
3 - wing-nut
4 - screw lock for the reactor stand

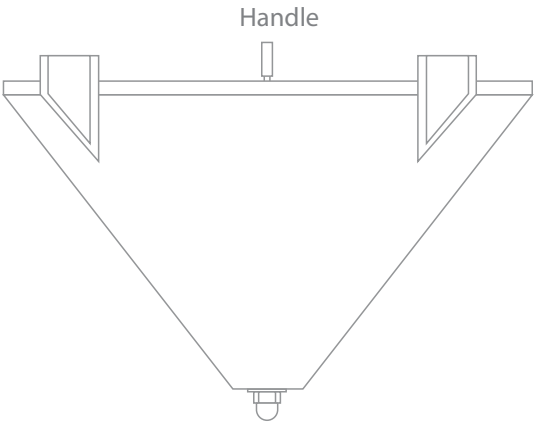

Figure 5. Sludge collection cone.

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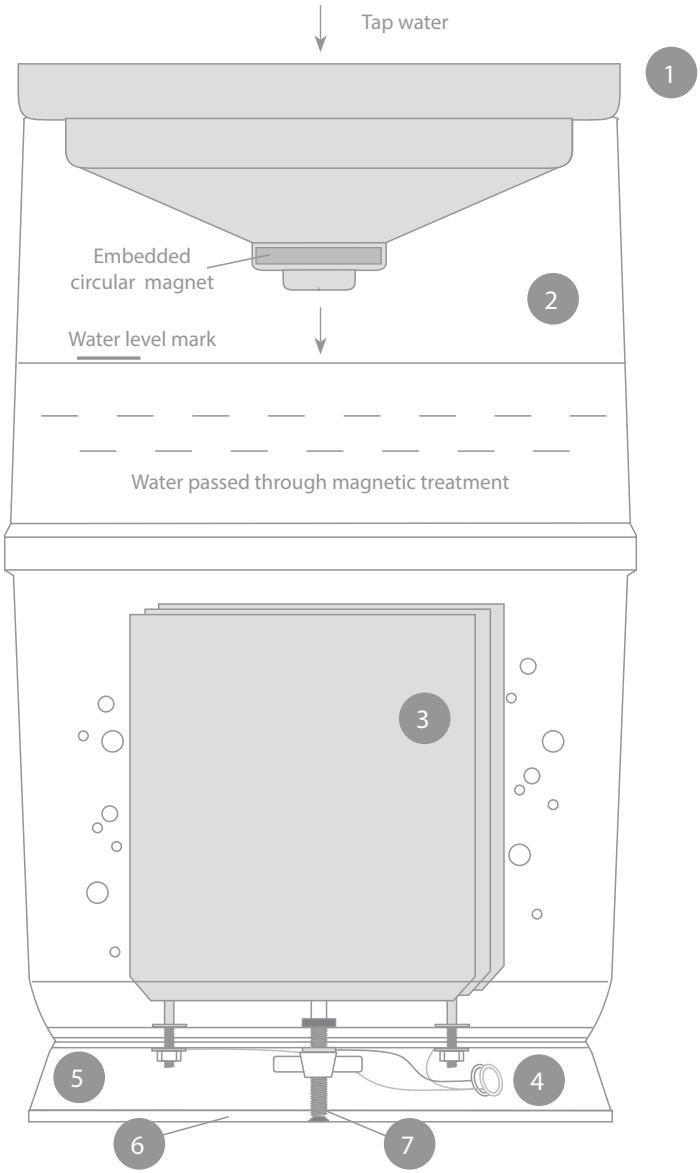

Fig. 6 Water treatment in the reactor

1 - cap-funnel
2 - reactor
3 - set of electrodes
4 - power supply connector
5 - stand
6 - basis
7 - screw-lock for the reactor basis

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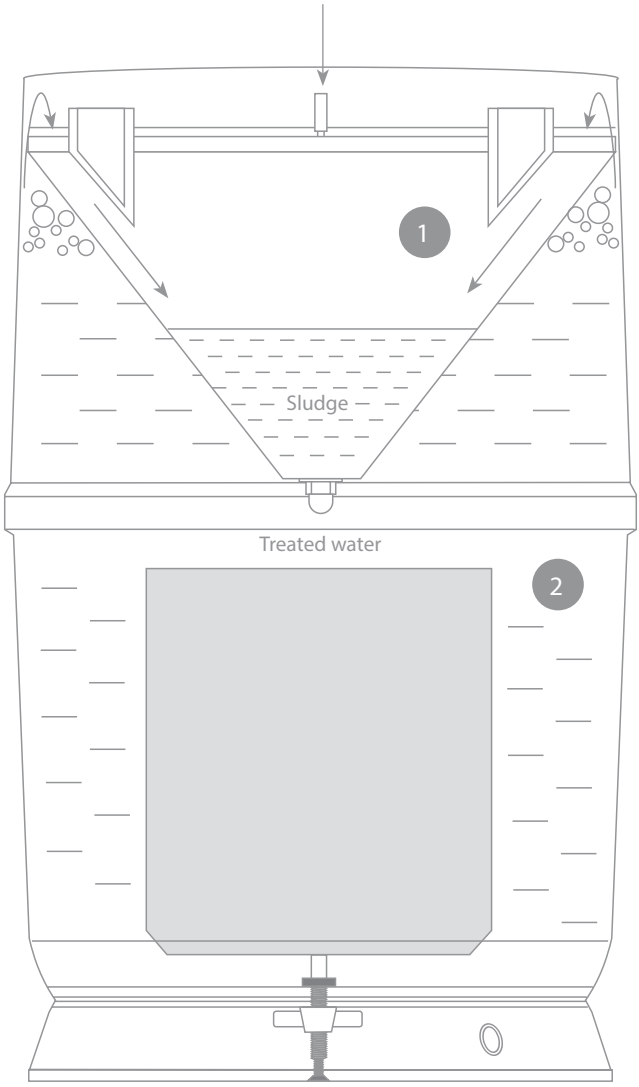

Figure 7. Sludge removal.

1 - sludge collection cone
2 - reactor

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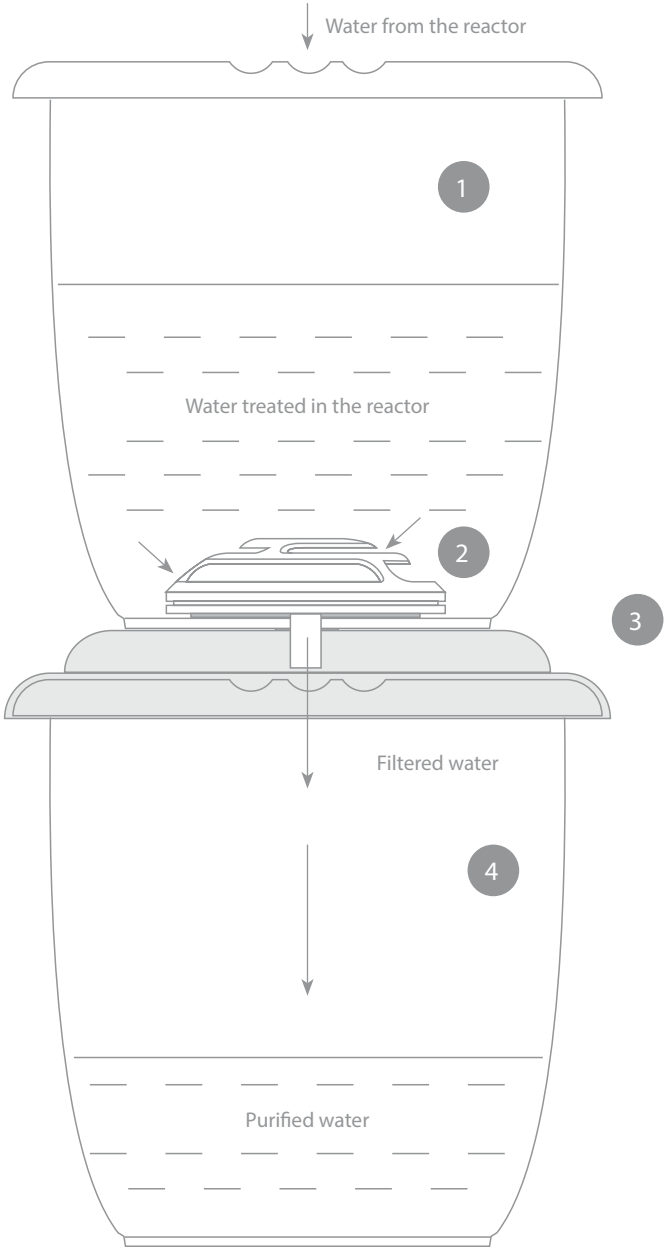

Figure 8. Water filtration.

1 - filtering tank
2 - filtering element
3 - cap
4 - tank for purified water

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4. ORDER OF OPERATIONS.

4.1. PREPARATION FOR OPERATION.

- Remove the filtering element (2) from the filtering tank (1) (Fig. 2). To do so, loosen the nut-lock (3) in the bottom of the filtering tank;

- Take off filtering element cap(1) (Fig. 3), remove filter-collectors (big 2 and small 3) and place them in a hot solution of 3% acetic acid or citric acid for 10-15 minutes.

- Wipe the inside of the filtering tank (1) (Fig. 2), cap-funnel (1) (Fig. 6), the reactor tank and the sludge collection cone (Fig. 5), tank for purified water (4) (Fig. 8) with the same solution.
- Squeeze filter-collectors (2, 3) 8-10 times under running water, then straighten them and put into the cap of the filtering element consistently, big and small (Fig. 3).

NOTE: If the filtering element is not used for 2 weeks or more, it is necessary to perform that procedure again.

- Install the filtering element cap (1) with filter-collectors (2, 3) in place (Fig. 3) by snapping it into the basis of the filtering element (4).
- Install the filtering element into the filtering tank (Fig. 2).

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4.2. SEQUENCE OF ACTIONS.

- Take off the cap-funnel (1) (Fig. 6) and remove the sludge collection cone (1) from the reactor (2) (Fig. 7).
- Flip the cap-funnel and install it onto the reactor (Fig. 6)
- Fill the reactor with tap water through the cap-funnel up to the water level mark in the form of stripes on the inner wall of the reactor (Fig. 6)

! Attention: do not allow water to the control and power unit!

- Remove the cap-funnel from the reactor. Make sure that the water level reaches the mark on the inner wall of the reactor. If necessary, add some water or remove.
- Connect the control and power unit cord to the connector on the case of the reactor, making sure the contact is strong and then insert the plug into the network ~ 110-220V

! Attention: it is necessary to follow the recommended sequence of actions!

- The light indicator (LED) on the control and power unit turns on with red light and after ~ 2 seconds is flashing green with slow blinking. Bubbling and intensive formation of foam (sludge) on the top of water (Fig. 6) starts inside the reactor.

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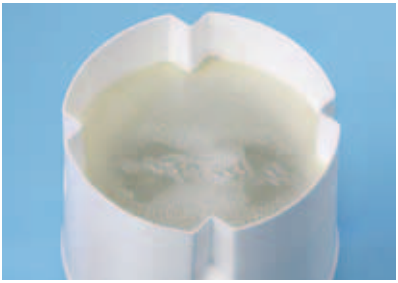

- When the frequency of LED blinking changes from low to high, the water treatment regime switches from the active process (electrolysis) lasting about 8 minutes to the passive (flotation mode) lasting approximately 10 minutes. When the flashing green LED turns off, the treatment process is completed. Disconnect the control and power unit from the network and then from the reactor.

- Take sludge collection cone 1 (Fig. 7) by the handle and put it into the reactor by matching its slots with guide lugs. Load the sludge collection cone vertically into the reactor by pressing on the handle gently, so that the cone is filled with fluid (sludge) for about 3/4 of volume.

- Remove the sludge collection cone with the liquid (sludge) strictly vertically from the reactor (do not spill the sludge).
- Pour the liquid from the sludge collection cone and rinse it on both sides.

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- Pour the treated water from the reactor to the filtering tank. The tank should be pre-installed on cap 3 (Fig. 8), which closes the tank for purified water 4 (Fig. 8).

- The filtered water is ready for consumption.
- Merge the water remaining after filtering from the filtering tank.
- Rinse the reactor. The unit is ready for the next use.

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5. MAINTENANCE

5.1. REGENERATION.

- Depending on the contamination level of the treated water, the filter-collector elements need to be washed from 2 to 5 times a month in a hot 3% solution of acetic or citric acid.
- If the unit is used regularly, rinsing should be done under running water, after wich filter-collectors should be squeezed 8-10 times.

ATTENTION: in case of preservation (non-use) of the unit for over 2 weeks, filter-collector elements must be stored in a weak solution of vinegar or lemon water.

5.2. CLEANING AND CHANGE OF ELECTRODES.

Regular cleaning of the aluminum plate of the central electrode (anode) (Fig. 4) should be performed at least once a month. That necessity is caused by the deterioration of the intensity of the electrolysis process because of the central electrode fouling by a layer of sludge. For cleaning of the central electrode it is necessary to:

- Turn the reactor tank, remove the stand (6) from the reactor stand (5) by removing the screw-lock (7) (Fig. 6).
- Unscrew the wing-nut (3) from the central electrode leg and remove the contact lug (2) (Fig. 4).
- Carefully remove the central electrode out of the electrode set (leave the rubber sealing gasket on the leg of electrode contact).
- Sand the plate of the central electrode (using abrasive paper, knife, etc.).

ATTENTION: It is strictly forbidden to take out the whole set of electrodes for cleaning and replacement of the central electrode.

NOTE: if the central electrode got thin and has lost mechanical strength, it should be replaced by a new one.

- Put the central electrode following guide lugs into the set of electrodes in initial position.
- Turn the reactor, mount the contact lug to central electrode and apply the wing-nut to lock.
- Check leak tightness of the reactor by filling it with water.
- Leaks are not allowed.

NOTE: The coagulant, which may occasionally appear in the treated water (depending on the region where the unit is used), is harmless to human health

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FOR INFORMATION

1. The most favorable temperature for the cleaning of treated water is +18°C - +25°C. Water at temperatures below +15°C should be warmed up the above temperatures.
2. **DO NOT FORGET TO DISCONNECT** the power cord of power unit from the 220V network upon completion of use of the unit for its intended purpose.

6. POSSIBLE ERRORS OF OPERATION AND FAULTS.

FAULT	REASON	ACTIONS
The indicator of constant light is off.	No voltage in the network.	Check the power cord and socket.
Sludge is not forming on the top of water while indicators are on.	No connection in the slot in the basis of the reactor.	Check the cord coming to the reactor and central electrode. Check the connection in the power and control unit slot.
Slow bubbling, lack of sludge formation.	Big stratification on the central electrode.	If necessary, change or clean the central electrode.
The unit is not working, indicators are not flashing.	The power and control unit is faulty.	Call the service engineer from the support. Send the control and power unit to the manufacturer repair service.

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7. REMINDER.

1. If you wish for any reason to repeat the cycle of water purification, it is necessary to:
- turn off the control and power unit after green light “flashes” with greater frequency and in 10-15 seconds reconnect the unit to the network;
- perform 2 full consecutive cycles of water purification.

! It is undesirable to clean water for more than two times, as this will remove useful mineral salts from the water.

2. When using a water treatment unit for the first time, the first portion of the treated water from the reactor should be poured into the sink.

3. Water processed in the reactor is extremely rich in atomic oxygen and is very active. Storing it in a glass container stimulates additional water saturation with silicon ions, which are so necessary to the human body. When boiling the treated water, white foam may form on its surface - that is the oxygen component. You should not be confused by that.

4. To prevent damage of the bottom of the filtering tank (Fig. 2) when fixing the filtering element (collector) in it, screw the wing-nut with no effort, until the full fit of the filtering element (collector) to the tank bottom.

5. If the treated water contains very little natural salt (is soft), it is necessary to add to the reactor a pinch of kitchen salt before processing.

6. Snow and distilled water cannot be cleaned in the unit, due to their zero conductivity.

7. Sludge formed in the process of water purification is an excellent fertilizer stimulant for any plant.

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8. TECHNICAL PASSPORT.

8.1. TECHNICAL SPECIFICATIONS.

Voltage and power supply frequency (V, Hz).....~ 198 - 242 V, 50 Hz

Note: unit can be operated at the voltage of 110 V and the frequency of 60 Hz

Power consumption (not more than) .....60 W

Reactor volume.....5 L

Time required to treat one portion of water .....~18 min.
not counting filtration, including active mode ~ 8 min.;

Passive mode .....~ 10 min.

Mode of operation .....cyclic

Unit weight with packaging.....~ 2.5 kg

Package dimentions.....45 cm x 25 cm x 25 cm

9. COMPLETENESS OF THE SET

1. Water treatment unit "BSL-MED-1" (EKSVO), set. - 1
Includes:
1.1. Reactor - 1 piece (food grade polystyrene)
1.2. Set of electrodes, including:
Plate - cathodes (stainless steel) – 2 piece
Plate - anode (Aluminium-Magnesium alloy) – 1 piece
Plates are attached to the set by clamps.
1.3. Metal wire ring (stainless steel)
1.4. Funnel-cap with an embedded magnet (food grade polystyrene)
1.5. Sludge collection cone (food grade polystyrene)
1.6. Cap (food grade polystyrene)
1.7. Filtering tank, including:
- Bucket, 6 liters (food grade plastic) – 1 piece
- Filtering element, 1 unit, consisting of:
  - Top - 1 piece (food grade polystyrene)
  - Base - 1 piece (food grade polystyrene)
  - Replaceable filtering element (collector) multilayer, large - 1 piece
  - Replaceable filtering element (collector) multilayer, small - 1 piece
  - Nut-lock - 1 piece (food grade polystyrene)

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- Sealing O-ring (food grade rubber) – 1 piece
- Sealing washer (food grade polystyrene) – 1 piece

1.8. Tank for purified water (bucket 6 L) – 1 piece
2. Replaceable central electrode (anode) – 1 piece
3. User manual - 1 piece
4. Warranty card - 1 piece
5. Microprocessor control and power unit - 1 piece
6. Packaging (pressed board) - 1 set

10. TRANSPORTATION AND STORAGE

10.1. Transportation of the packed unit should be made in vertical position by any kind of covered vehicles.

10.2. Store the unit in a dry place, at a temperature from - 5°C to +40°C

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WARRANTY OBLIGATIONS

1. The manufacturer guarantees to the consumer compliance of the unit parameters and characteristics to TU 3697-001-27478758-2008 requirements if consumer follows conditions and rules of operation stated in this user manual.
2. A warranty period of the unit operation is 12 months from the date of sale.
3. Warranty obligations do not apply to the unit:
- Without the passport;
- Not in warranty service;
- Having mechanical damages (of the reactor and accessories);
- Used with violation of the operation rules, specified in the present instruction.

4. Warranty obligations do not apply to:
- Replaceable filter - collector elements;
- Replaceable electrode - anode

5. Warranty obligations do not apply to the microprocessor control and power unit in case of:
- Mechanical damage;
- Damage / melting of socket or break of wire;
- Failure due to its misuse, including filling with water or connecting to the network with parameters inadmissible for operation.

6. The unit service life is 10 years from the manufacturing date.
7. During the warranty period the consumer has a right for unit repair free of charge, if detected faults are caused by manufacturing defects. In this case delivery from the consumer to the plant and back to the consumer is made at the expense of the manufacturer.
8. Execution of the warranty obligations is regulated according to the Russian Federation law "Concerning protection of the consumer rights".
9. All questions concerning warranty and post-warranty repair and maintenance should be addressed to the manufacturing plant / factory-manufacturer (upon direct purchase of the unit) and to the addresses of vendors - representatives (dealers) of the manufacturer, in case of the unit purchase through them.

CERTIFICATE OF ACCEPTANCE

Water treatment unit "BSL-MED-1" (EKSVO) is made and accepted according to TU 3697-001-27478758-2008 and is considered suitable for operation.
No. C-RU.AE44.B.00953 certificate of conformity of 19.01.2012

Stamp of the Quality Control Department

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WARRANTY CARD No. 1
Water treatment unit "BSL-MED-1" (EKSVO), TU 3697-001-27478758-2008

Sale date "___"_____ 20__ Vendor _____ _____
(signature)

Seal

The set is complete, there are no complaints on unit appearance.

Customer _____ _____
(Customer's signature)

_____

_____
(works on fault rectification were performed)

"___"_____ 20__ Representative of the vendor (manufacturer) _____
(signature)

Owner _____
(signature)

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WARRANTY CARD No. 1
Water treatment unit "BSL-MED-1" (EKSVO), TU 3697-001-27478758-2008

Sale date "___"_____ 20__ Vendor _____ _____
(signature)

Seal

The set is complete, there are no complaints on unit appearance.

Customer _____ _____
(Customer's signature)

_____

_____
(works on fault rectification were performed)

"___"_____ 20__ Representative of the vendor (manufacturer) _____
(signature)

Owner _____
(signature)

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CERTIFICATION

РОССИЙСКАЯ ФЕДЕРАЦИЯ
СЕРТИФИКАТ СООТВЕТСТВИЯ

РОССИЙСКАЯ ФЕДЕРАЦИЯ
ПРИЛОЖЕНИЕ
к СЕРТИФИКАТУ СООТВЕТСТВИЯ

СВИДЕТЕЛЬСТВО

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FOR NOTES

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